War Syndromes and Their Evaluation

From the U.S. Civil War to the Gulf War

Kenneth C. Hyams, MD MPH

Naval Medical Research Center,

Forest Glenn, MD

Background of Investigation

- 1993: Questions about whether there had been prior illnesses like the postulated Gulf War syndrome
- Reliance on primary sources -- usually doctors who had participated in a war
- Began investigation with U.S. Civil War because comparative medical data was available

U.S. Civil War

Irritable Heart/ Da Costa's syndrome

Postulated cardiac condition among evaluated among 300 patients in frequently a specialized referral center

Symptoms: **Shortness of Breath thoughts of Palpitations Chest pain Headache appetite Diarrhea Dizziness fever Disturbed sleep**

Signs: **None confirmed**

Causes: **Strenuous duties psychological Infectious Diseases Idiopathic**

Treatment: **Various drugs, including digitalis**

Nostalgia

Illness observed most often the youngest soldiers who had no combat experience

Symptoms: **Obsessive home Apathy Loss of Diarrhea Occasionally**

Signs: **None**

Cause: **Primarily**

Treatment: **Home leave**

World War I

Effort syndrome/ Soldier's heart stress reaction)

Postulated physiological disease; psychological illness after affected large numbers of troops victims

Symptoms:

Symptoms:

pain

concentrating

Shell Shock (acute combat

Considered initial evaluation of

Shortness of Breath
Dramatic paralysis/blindness
Palpitations
Dazed or detached manner
Chest pain
Heightened startle response
Headache

Headache

Diarrhea

Diarrhea

Fatigue

Fatigue

Dizziness

Palpitations/chest

Difficulty concentrating

Difficulty

Forgetfulness

WW I: Effort Syndrome

- Third leading cause of disability determination
  - Massive governmental response
    - Three specialized referral centers in the U.K. and USA
    - Treatment mainly supportive: exercise and encouragement
  - Research -- coordinated by Medical Research Council in the U.K.
  - Compensation provided
- Mail Survey after war
  - Unique disease not identified and no increase in mortality
- Unanswered questions after the war
  - Name of illness
  - Case definition
  - Cause(s): exhaustion, pre-existing condition, infectious disease, stress
  - Physiological vs psychological illness

World War II/Korea

Effort syndrome	*Battle fatigue/combat exhaustion (acute combat stress reaction)*
Postulated physiological disease evaluated in case series	Clearly considered a psychological illness
Symptoms: as in WWI dramatic symptomatology somatic symptoms often predominating --	***Symptoms:*** Less with
Shortness of breath	Fatigue
Palpitations	
Headache	Diarrhea
Disturbed sleep	
Forgetfulness	

Vietnam War

Vietnam Syndrome	*Post-*
Agent Orange Exposure	*(Post traumatic stress disorder)*
Organic diseases associated with exposure to dioxin and increased symptoms among veterans who may have been exposed	**Long-term psychological morbidity**
Symptoms: **Fatigue** **Shortness of breath** **Palpitations** **Chest pain** **Headache** **Muscle and joint pain**	**Fatigue** **Headache** **Muscle and joint pain** **Diarrhea** **Disturbed sleep** **Forgetfulness**	***Symptoms:***

Gulf war

Gulf war syndrome/
Unexplained illnesses
Adjustment reaction/PTSD

Postulated physiological disease

PTSD found in 5-15% veterans

Symptoms:

Fatigue

Headache

Muscle/joint pain

Diarrhea

Shortness of breath

Difficulty concentrating

Chest pain

Sleep disturbance

Difficulty concentrating

Forgetfulness

Symptoms of

of surveyed

Symptoms:

Fatigue

Headache

Muscle/joint pain

Sleep disturbance

Illnesses Among War Veterans

- Diverse physiologic diseases
- Varied psychiatric illnesses
  - Pre-existing conditions
  - Acute combat stress reaction
  - Adjustment reaction/PTSD
- Multiple somatic symptoms

As expected in any large, adult population subjected to complex environmental and psychological exposures, a wide diversity of health problems developed after wars.

Major War-Related Illnesses Defined by Symptoms

Two Major Categories

Psychological Conflict Illnesses	*Postulated Physiologic Disease*	
U.S. Civil War syndrome	Nostalgia	DaCosta's Heart syndrome
World War I		Soldier's Shell Shock
World War II		Effort Battle fatigue
Korea		
Battle fatigue	--	

Similarities in War Syndromes

- Unique populations were singled out for intense scrutiny after an exceptional traumatic experience
  - Retrospective studies with inadequate exposure data
  - Recall bias
  - Lack of adequate control populations

- Two categories of illnesses identified
  - Postulated physiological disease
  - Psychological illness

Similarities in War Syndromes

- Clinical findings
  - No characteristic physical sign or lab abnormality
  - Shared symptoms:
    - Fatigue
    - Shortness of breath
    - Headache
    - Sleep disturbance
    - Forgetfulness
    - Difficulty concentrating
- Lack of unique pathophysiology limited:
  - Development of specific case-definitions
  - Assessment of biologic plausibility of postulated causes

Similarities in War Syndromes

- History of government concern for veterans in the U.S., Canada, and the U.K.
  - Specialized health care centers
  - Concerted research program
  - Compensation

Differences in Recent War Syndromes

- Involvement of family members
  - Reports of sick family members following contact with cloths and equipment after the Vietnam war and the Gulf war
  - Similar psychological problems among family members of Israeli soldiers

- Enumeration and statistical analysis of subjective sensations following the Gulf war

Quotes from Investigators

"We are unable to assign a definite pathological basis to the majority of cases. There is no single underlying cause to account for the occurrence of … soldier's heart." Clinical Evaluation of 5000 WWI Soldiers. W.E. Hume. Lancet 1918:i:529

"It is the apparent diversity of cause which makes the syndrome so extraordinarily difficult to investigate." The Soldier's Heart and the Effort Syndrome.
Thomas Lewis. 1919

Quotes from Investigators

"The group is well defined, and in our view the symptomatology suggests, not primary cardiac mischief, but disturbances of function resulting from toxic absorption or actual infection. We have systematically examined eleven patients from the this point of view, and in ten of them have found the streptococci (in two cases, staphylococci) are present in urine…We take the view that we are dealing with an infection of the blood with organisms of a low grade of virulence and that these are filtered out in the urine, for the urine contains no pus cells, and, in a number of patients, the organism has been recovered from the blood itself."

A note on the "Irritable Heart" of Soldiers. Thomas Cotton,

Thomas Lewis, F.H. Thiele. BMJ 1915;1:722

Quotes from Investigators

“The faulty examination of recruits in the last war is clearly illustrated by [the fact] that nearly half the patients invalided for ‘effort syndrome’… developed their symptoms before joining the forces…”

—The Soldier’s Heart and the Effort syndrome. Thomas Lewis, 1940.

Conclusions

- Poorly understood war syndromes have been associated with armed conflict since at least the U.S. Civil War.
- Similar process by which these syndromes were medically evaluated and officially defined.
- War syndromes involve fundamental questions about health and illness.

Developing Case Definitions

Symptoms-based conditions: postulated physiologic diseases characterized primarily by chronic somatic symptoms:

- Chronic Fatigue Syndrome (neurasthenia)
- Fibromyalgia
- Multiple Chemical Sensitivities
  (environmental chemicals, food allergy & chronic candidiasis)
- Silicone-associated Atypical Rheumatic Disease
- Sick Building Syndrome
- Gulf War Syndrome

History

- Limited progress in establishing widely accepted diagnostic criteria
- Analysis of published reports to determine why it has been difficult to develop case definitions of unique diseases

Similarities: Symptom-based Conditions

- Not consistently associated with physical or laboratory abnormalities

- Characterized by numerous, common somatic complaints that potentially involve multiple organ systems and not a consistent pattern of symptoms:
  - Fatigue
  - Headache
  - Muscle and joint pain
  - Memory and concentration difficulties
  - Sleep disturbances

No pathognomonic symptoms or signs identified

Conclusion

- Specificity has been the major limitation in the development of case definitions for symptom-based conditions:

  It has not been possible to establish diagnostic criteria that exclude well-recognized medical and psychiatric causes of chronic somatic symptoms or to distinguish among the various symptom-based conditions.

- Specific diagnosis has not been possible because subjective criteria do not provide sufficient information to identify a unique physiologic disease

  - Possibly too much individual variability to differentiate or quantitate subjective sensations. Even in well-recognized diseases, symptoms have not been consistently related to physical impairment.
  - Limited data on the underlying nature and long-term consequences of commonly reported somatic symptoms.

Quotes

“75% of Americans ‘diseased’ under new definitions”

Reuters Health, April 12, 1999

Quotes

"The tendency has always been strong to believe that whatever received a name must be an entity or being, having an independent existence of its own. And if no real entity answering to the name could be found, men did not for that reason suppose that none existed, but imagined that it was something peculiarly abstruse and mysterious."

John Stuart Mill